REPLACEMENT PROGRAM, Importance to the Dairy

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Goal of The Replacement Program

The primary goal of all heifer programs is to raise the highest quality heifer who will maximize profits once she enters the lactating herd. A quality heifer is one carrying no limitations into the dairy herd that would hinder her ability to produce under the farm's management system. Profits are maximized by obtaining the quality heifer at the lowest possible cost.

Impact of The Replacement Enterprise

The bottom line of a dairy is impacted by:

- Costs
  - Direct
  - In-direct
- Number of animals being raised
- Quality of the animals

Relationship with the Dairy

- Total cost to raise heifer
- Number of heifers being raised
  - Age of first calving
- Investment in replacement enterprise
- Quality of heifer enterprise
- Number of animals needed by dairy
  - Cull rate

What is the Impact?

- How does the replacement enterprise impact the dairy business performance?
- Setting the base
  - Treat heifer enterprise as a separate business
  - Set budget for dairy to buy heifers
  - Current performance
  - Map changes in performance

Base Scenario

- 300 cow dairy
- Stable herd size
- 36% cull rate, last 5 years
- Budgeted expense per heifer = $2,200
- Sell calves for $600
- Cost/day, raising costs (cash), per heifer = $1.70
- Age of first calving = 27 months
- Capital invest./ heifer = $700
- % heifers cull rate per year = 7%

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Replacement Enterprise - Base

- Number of heifers needed to maintain herd size = 264
- Total cost per day per heifer completing system = $2.28(cash cost + depreciation + non-performance expense)
- Total cost of animal = $1,874(no beginning value or interest on investment)
- Net enterprise income = -$17,359
- Total investment in enterprise = $590,100
- % return on total investment = -2.94%
- Overall dairy business % return = 6.8%

Enterprise Impact

Changes that Can Be Made

- Lower raising costs
- Decrease calving age
- Decrease number needed – dairy cull rate
- Decrease replacement cull rate
- Improve quality of animal
- Do them all

Summary Table – Replacement Only

Enterprise Impact Calculator

	Net Enterprise Income	Total Investment	Return on Investment	Number Raised
Base	-$17,359	$590,100	-2.94%	264
Cost	-$7,730	$578,068	-1.34%	264
Age	$2,198	$476,397	0.46%	225
Dairy Cull%	-$14,466	$491,750	-2.94%	220
Heifer Cull%	-$6,051	$550,335	-1.10%	254
Premium Paid	-$14,743	$600,328	-2.46%	264
Combined	$22,958	$365,799	6.28%	179
Comb w int. inv.	$18,065	$429,819	4.20%	179
Comb sell excess	$28,032	$499,767	5.61%	233

Summary Table – Overall Business

Enterprise Impact Calculator

	Net Farm Income	Total Investment	Return on Investment	Number Raised
Base	$180,930	$2,690,100	6.80%	264
Cost	$190,558	$2,678,068	7.19%	264
Age	$200,487	$2,576,397	7.86%	225
Dairy Cull%	$204,823	$2,591,750	7.98%	220
Heifer Cull%	$192,238	$2,650,335	7.33%	254
Premium Paid	$183,546	$2,700,328	6.87%	264
Combined	$242,278	$2,465,799	9.91%	179
Comb w int. inv.	$237,354	$2,529,819	9.46%	179
Comb sell excess	$249,321	$2,529,819	9.59%	233

What is The Cost?

- They are free?
- Just purchased feed?
- Just hired labor?
- The sum of:
  - All inputs, cash and non-cash
  - Fixed costs associated with capital investments
  - Opportunity cost of capital
  - Charges for animals not completing replacement program.

Reported Costs to Raise Dairy Replacements

- Michigan
  - 1973 $617
  - 1980 $1,085
  - 1986 $1,177
- Wisconsin
  - 1982 $1,549
  - 1987 $1,326
  - 1998 $1,099
  - 2000 $1,360
- Washington
  - 1992 $1,242
- Pennsylvania
  - 1998 $1,088
  - 1985 $925 Low
  - $1,271 Medium
  - $1,597 High
- Idaho
  - 1992 $1,159
- New York
  - 1990 $1,265
  - 1993 $1,150
  - 2003 $1,429
  - 2007-8 $1,682

What is The Cost?

- Hard to know what the “Average” is.
- Few farms treat the replacement enterprise as a separate business and know their actual costs.
- Can use various tools to estimate what costs may be for different areas of the system.

The Big Two

- Feed
  - Is enough grown?
  - Proper quality?
  - How much purchased?
  - How much does it cost?
  - Where is the manure going?

The Big Two

- Labor
  - Is it doing a good job?
  - How much is it costing?
  - Does it have the right tools?
  - How efficient/inefficient is the set-up?
    - Size of barns
    - Hand labor
    - Location/design of facilities
      - “Free” barns may cost too much!

The Big Two

- Feed and Labor
  - 60%-70% of the total costs to raise heifers
  - Are they being used efficiently?
  - Is a quality heifer being produced?

Number of Heifers

- How many total heifers are being raised?
- How many are needed to maintain herd size?
- How many are needed to offset heifer cull rate?
- Investment level
  - How much barn space?
  - How much equipment?
  - Dollar value of heifers
  - Net Income is divided by investment to determine profitability

Number of Heifers

- Two - 200 cow dairies
- One has 130 total heifers in system?
- One has 180 total heifers in system?

- Who has less barns, equipment, bunks, etc?

Age of First Calving

- Number of heifers needed
- Production life
- Investment level

Number of Heifers Needed

Number of Heifers Maintained, All Ages, for Various Calving Ages and Replacement Rates

Average Herd Size, Milking and Dry Animals **100**

Non-Completion Rate*, Dairy Replacements **8.00%**

Calving Age Months	Cow Replacement Rate, Percentage								
	20	23	26	29	33	36	39	42	45
18	31	36	41	45	52	56	61	66	70
20	35	40	45	50	57	63	68	73	78
22	38	44	50	55	63	69	75	80	86
24	42	48	54	61	69	75	81	88	94
26	45	52	59	66	75	81	88	95	102
28	49	56	63	71	80	88	95	102	110
30	52	60	68	76	86	94	102	110	117
32	56	64	72	81	92	100	109	117	125

* Non completion rate represents the percent of heifers that start the replacement system that don't enter the dairy herd.

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Quality of the Replacement

- Growth vs. milk
- Calving problems
  - Too heavy (fat)
  - Too light (frame)
- General condition of the animal
  - Mastitis
  - Feet and legs
  - Injury
- Prior treatment(s)

Summary

- Quality heifers should be the first focus.
- Need to look at all costs to raise heifers.
- Impact on the dairy business performance is more than the cost to raise a heifer.
- Number of heifers being raised, number of animals needed by the dairy to maintain herd size, and quality of heifer play significant role.

Costs to Raise Dairy Replacements

- 12 Farms completed in time for meetings
- 5 additional farms being summarized
- Final report will be available on the website with other materials from this program
- Snapshot of how much spent to raise heifers last 3 months of 2007
- Used to estimate total spent in raising the replacement over the 23 months.

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TOTAL COSTS TO RAISE HEIFERS
12 New York Dairy Farms, December 2007

Total Cost per Animal Completing	Average	Per Day	Per Pound	Percent
Feed Total	$883	$1.28	$0.73	53%
Grown Feed	$560	$0.81	$0.46	
Purchased Feed	$326	$0.48	$0.27	
Labor	$215	$0.31	$0.18	13%
Bedding	$67	$0.10	$0.06	4%
Health	$37	$0.05	$0.03	2%
Breeding	$48	$0.07	$0.04	3%
Trucking	$3	$0.00	$0.00	0%
Insurance	$8	$0.01	$0.01	0%
Machinery Operation	$35	$0.05	$0.03	2%
Machinery Ownership	$21	$0.03	$0.02	1%
Building Operation	$18	$0.03	$0.01	1%
Building Ownership	$106	$0.15	$0.09	6%
Manure Storage Operation	$0	$0.00	$0.00	0%
Manure Storage Ownership	$4	$0.01	$0.00	0%
Manure Spreading	$55	$0.08	$0.05	3%
Custom Boarding	$7	$0.01	$0.01	0%
Professional Services and Fees	$4	$0.01	$0.00	0%
Non-Performance Expenses	$36	$0.05	$0.03	2%
Interest on Daily Investment	$136	$0.20	$0.11	8%
Total	$1,682	$2.43	$1.18	

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Number of Heifers	943		
Age, Months	22.8	22	24
Calving Weight, Pounds	1,314	1,272	1,375
Average Daily Gain	1.77	1.64	1.88
All Heifers per Labor Hour	46.7	35.4	65.13
Pre-Weaned Heifers per Labor Hour	12.2	6.65	14.86
Post Weaned Heifers per Labor Hour	71.1	51.2	90.5
Total Investment in Animal	$1,832	$1,698	$2,072
% Non-Completion Rate	7.37	4.9	9.8
Cost per Worker Equivalent	$36,185	$32,572	$39,789

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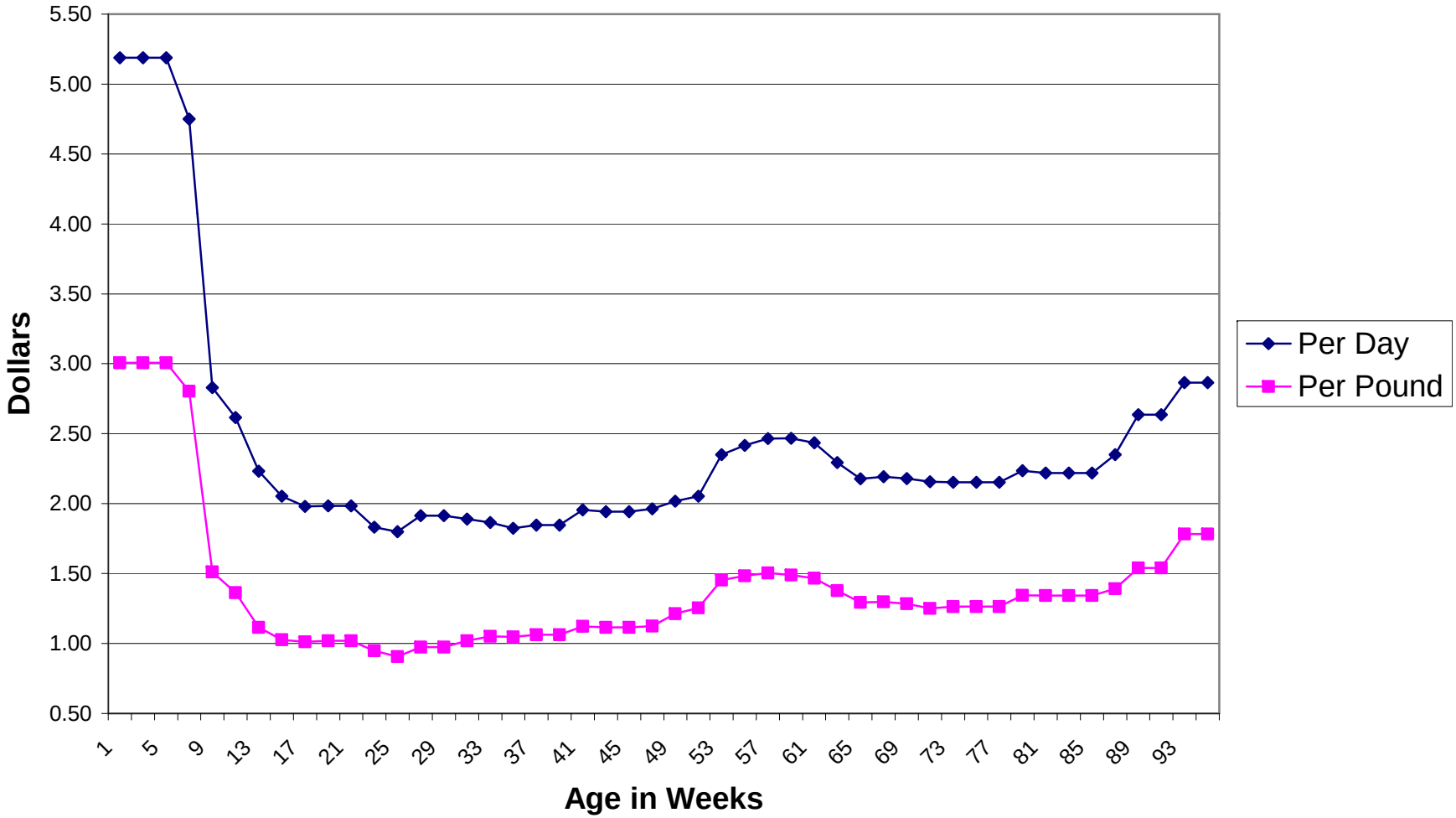
Average Total Heifer Raising Costs
12 New York Dairy Farms, December 2007



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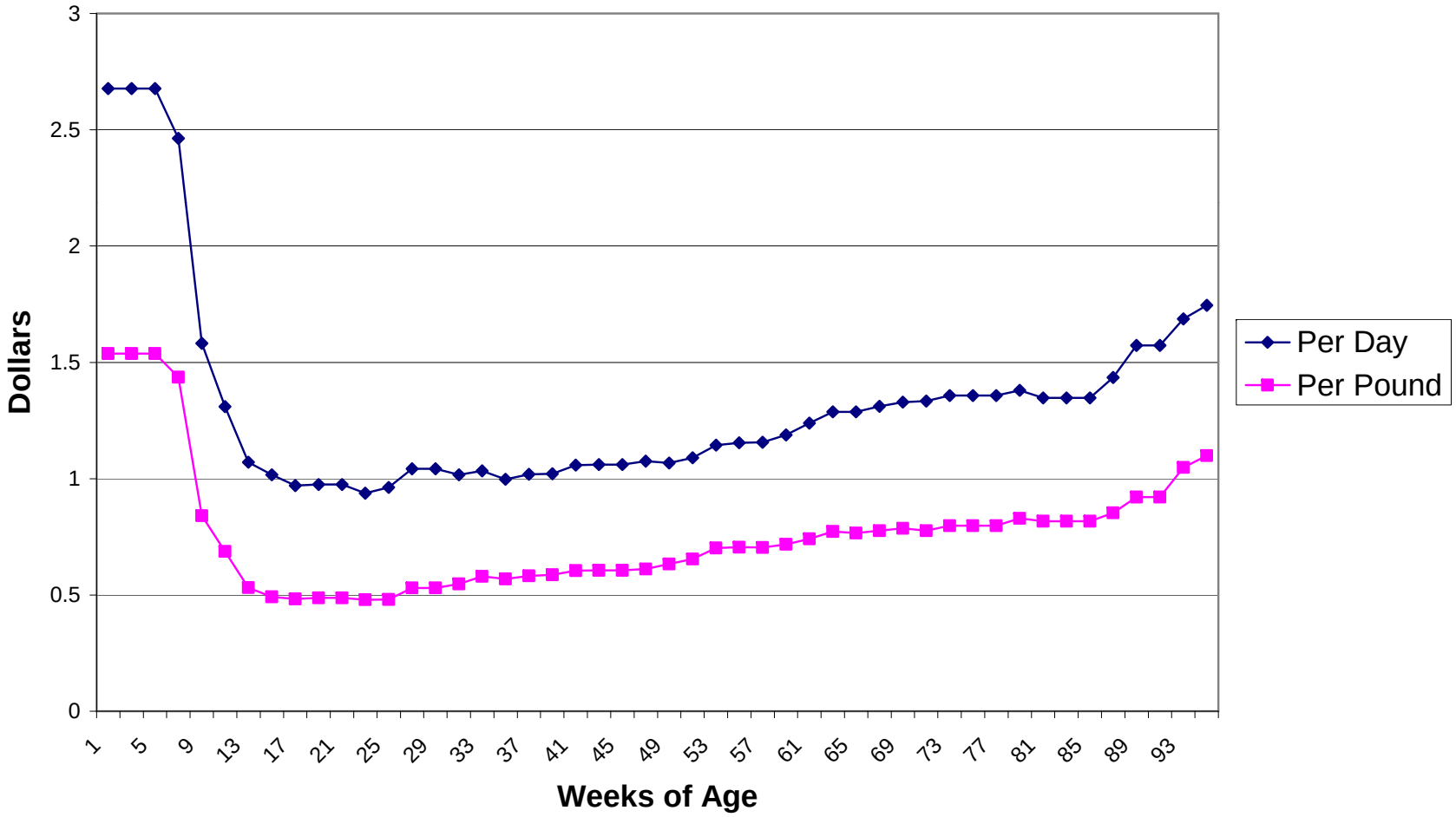
Average Heifer Feed Costs
12 New York Dairy Farms, December 2007



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Breakdown of Costs of Raising Heifers by Stage of Growth
12 New York Dairy Farms, December 2007

Per Pound of Gain

	Stage of Growth			
	Birth to 200 Lbs	201-700 lbs	701-850 lbs	851-Calving
Feed	$1.362	$0.538	$0.666	$0.790
Labor	0.727	0.112	0.123	0.123
All Other Costs	0.536	0.383	0.539	0.551
Total	$2.625	$1.033	$1.328	$1.464

By Total Investment

	Stage of Growth			
	Birth to 200 Lbs	201-700 lbs	701-850 lbs	851-Calving
Feed	$149.8	$269.0	$99.8	$369.8
Labor	80.0	56.2	18.4	57.6
All Other Costs	59.0	191.6	80.9	258.7
Total	$288.7	$516.7	$199.2	$686.1
% of Total Cost	17%	31%	12%	41%
% of Total Growth	8%	38%	12%	35%

Questions